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SMITH, GAMBRELL & RUSSELL, LLP
1850 M STREET, N.W., SUITE 800
WASHINGTON, DC 20036

| EXAMINER | |
|---|---|
| HORN, ROBERT WAYNE | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2837 | |

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/526,670 | SATO, HIDEAKI | |
| | Examiner | Art Unit | |
| | Robert W. Horn | 2837 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1, 2 and 9-12 is/are rejected.

7)☒ Claim(s) 3-8 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/4/05, 7/21/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yaskawa Electric Corp (JP 11-308894), in view of Hitachi, Ltd. (JP 2723764), Knight (U.S. Patent 4,862,142), Zweighaft (U.S. Patent 5,426,355), and Atarashi (U.S. Patent 5,929,578).

Regarding claim 1, Yaskawa Electric Corp. discloses a rotation driving apparatus having a motor (figure 1, item 8) at least rotating at a high speed and a low speed, a torque generating circuit for generating a torque of the motor (figure 1, item 6) by a supply voltage from a power source (figure 1, item P, a motor control circuit for controlling rotation of the motor (figure 1, item 5),

the torque generating circuit includes voltage detector for detecting a level of the supply voltage and a period of voltage drop (figure 1, item 17).

Yaskawa Electric Corp. does not explicitly show the following: a rotation speed detection circuit; communicating the rotation speed or voltage to the controller; memorizing the rotation speeds and voltage drops; or retrieving this data for use in controlling the motor.

Atarashi teaches a rotation detector (figure 1, item 2) for detecting a rotating speed of the motor and compensating for the control of the motor during voltage

variation (column 3, lines 21-26); he teaches a power source voltage measurement (figure 1, item 8) and operating a motor appropriately where there is substantial variation in the power supply voltage (columns 1-4 and figure 9).

Knight teaches remembering data concerning a voltage drop and a period thereof under an instantaneous blackout recoverable within a predetermined period.

Zweighaft teaches a rotation-control pattern information of the motor corresponding to the power-recovery information (abstract), in advance. He also teaches a controller for delivering the motor control pattern to the motor control circuit.

Hitachi, Ltd teaches the controller memorizes power-recovery information and the controller uses the power recovery information later to evaluate and possibly resume the process.

The references suggest the functions of:

transmitting a detection signal to the motor control circuit (process memory data, suggested by Hitachi, Ltd ) and controller for delivering the rotating speed of the motor and a number of revolutions thereof to and from the motor control circuit (motor control pattern, suggested by Zweighaft);

the voltage detector transmitting a voltage-drop information to the controller (Hitachi, Ltd, paragraphs 11 and 12),

the controller controls the rotation of the motor upon comparing the voltage-drop information, the power-recovery information and the rotation-control pattern information of the motor with each other (suggested by Hitachi, Ltd and Zweighaft).

The motivation for the combination of element is provided by Yaskawa Electric Corp., "the time required until control (of the motor) is disabled during power failure can be extended during the operation of the motor (abstract, Solution). Also Hitachi, Ltd teaches the system based on the processing can determine if a process can be continued normally after power (paragraph 10). Atarashi teaches that the motor can be allowed to continue to operate over a broad range of operating voltages (abstract). Zweighaft teaches a controlled deceleration of the motor to prevent the potential havoc of uncontrolled deceleration.

The following criteria apply: 1) it would be within the ordinary skill in the art to make the combination of the limitations cited, 2) the problem solving area, motor control during power failure, is common to the references, 3) a proper motivations are taught by the references, and 4) the combined references recite or suggest all the limitations of the claim.

It would have been obvious to someone of ordinary skill in the art of motor control to combine the motor structure and motor speed control function responsive to power loss and voltage sagging taught by Yaskawa Electric Corp. with the additional references referenced above, for the motivations shown.

Regarding claim 2, Yaskawa Electric Corp., Hitachi, Ltd, Knight, Zweighaft, and Atarashi teach the rotation driving apparatus as claimed in Claim 1, and Yaskawa Electric Corp. teaches the limitation wherein when the voltage detector detects a voltage drop during the accelerating rotation of the motor, the controller outputs control

signals of decelerating rotation of the motor and subsequently rotating the motor at a constant speed (abstract, lines 9-15).

It is noted that claim 9 has all the limitations of claim 1 except:

the motor control circuit memorizes power-recovery information having a voltage drop and a period thereof under an instantaneous blackout recoverable within a predetermined period,

the comparing of the data from the controller and the motor controller.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yaskawa Electric Corp., Hitachi, Ltd, Knight, Zweighaft, and Atarashi as applied to the limitations of claim 1 above, and further in view of Cipelletti et al. (U.S. Patent 5,673,194).

Regarding claim 9, Yaskawa Electric Corp., Hitachi, Ltd, Knight, Zweighaft, and Atarashi discloses a rotation driving apparatus having a motor at least rotating at a high speed and a low speed, a torque generating circuit for generating a torque of the motor by a supply voltage from a power source, a motor control circuit for controlling rotation of the motor, rotation detector for detecting a rotating speed of the motor and transmitting a detection signal to the motor control circuit and controller for delivering the rotating speed of the motor and a number of revolutions thereof to and from the motor control circuit, wherein

the torque generating circuit includes voltage detector for detecting a level of the supply voltage and a period of voltage drop, the voltage detector directly transmitting a voltage-drop information to the motor control circuit,

the controller memorizes a rotation-control pattern information of the motor corresponding to the power-recovery information, the rotation-control pattern information being transmitted to the motor control circuit in advance, and

the motor control circuit controls the rotation of the motor upon comparing the voltage-drop information, the power-recovery information and the rotation-control pattern information of the motor with each other.

The combined references do not teach all the facets of:

the motor control circuit memorizes a power-recovery information having a voltage drop and a period thereof under an instantaneous blackout recoverable within a predetermined period. Zweighaft teaches the limitation where there is a controller and a motor control capable of memorizing and communicating the motor control process. However, he teaches that the local controller operates the contingent control of the motor (deceleration) in the event of power failure. Hitachi, Ltd teaches a function for memorizing process data by the controller and responding at the time of failure and of recovery. Cipelletti et al. teaches a recording system for a production line that provides two sets of process data, which may include control unit data (abstract, figure 1).

Cipelletti et al. teaches the motivation for having the controller and the motor controller having a copy of the process data, so that the data may be correlated and that the process can be reconstructed, if necessary.

It would have been obvious to someone of ordinary skill in the art of motor control to add the element of a motor controller memorizing its process data (voltage drop information, the power-recovery information and the rotation-control pattern information)

with the system controller also memorizing the process data, so that the data may be correlated (compared) and that the process can be reconstructed, if necessary

Regarding claim 10, Yaskawa Electric Corp. teaches a rotation driving method for a rotation driving apparatus having a motor at least rotating at a high speed and a low speed, a torque generating circuit for generating a torque of the motor by a supply voltage from a power source, and voltage detector arranged in the torque generating circuit to detect a level of the supply voltage and a period of a voltage drop (figure 1, abstract).

Yaskawa Electric Corp. teaches the components of the comprising steps concerning the control of the motor, but not the components of the storage of power failure information, or the use of the power failure and power recovery information in controlling the motor. Hitachi, Ltd. teaches the storage of process information at a power failure and determining if a process can be continued up power recovery (problem, paragraph 11, and means for solving problem, paragraphs 7-13). Knight teaches the storage of voltage drop and power interruption details (abstract and figure 1).

The references collectively teach the method comprising the steps of:

Step 1:

Hitachi, Ltd. teaches memorizing a power-recovery information (processing state)

Knight teaches a circuit with memory for recording voltage drop (voltage) and the period of the voltage drop under an instantaneous blackout (power interruption details),

Hitachi, Ltd. teaches determining if normal operation is recoverable within a predetermined period.

Yaskawa Electric Corp. also teaches determining if normal operation is recoverable within a predetermined period and a rotation-control pattern information of the motor corresponding to the power-recovery information, in advance; and

Step 2:

Yaskawa Electric Corp. teaches getting a voltage-drop information detected by the voltage detector and further controlling the rotation of the motor upon considering detected voltage.

Hitachi, Ltd. teaches comparing information from the time of failure with the recovery information in deciding how to continue a process and Knight teaches storing voltage drop and power failure information and Yaskawa teaches control of the motor based on voltage data.

The references collectively teach components that read on controlling the motor upon comparing the voltage-drop information, the power-recovery information and the rotation-control pattern information of the motor with each other.

Yaskawa Electric Corp. teaches a motivation of extending the amount of time before the motor control is lost (paragraph 7).

The following criteria apply: 1) it would be within the ordinary skill in the art to make the combination of the limitations cited, 2) the problem solving area, motor control during power failure, is common to the references, 3) a proper motivation is taught by

the secondary reference, and 4) the combined references recite all the limitations of the claim.

It would have been obvious to someone of ordinary skill in the art of motor control to combine the method of controlling a motor during power failure and voltage drop with respect to voltage detection, taught by Yaskawa Electric Corp., with the method of storing and receiving process information during power failure and voltage drop, taught by Hitachi, Ltd., with method of storing voltage and power failure conditions, taught by Knight.

Regarding claim 11, Yaskawa Electric Corp., Hitachi, Ltd. and Yaskawa Electric Corp. teach the rotation driving method as claimed in Claim 10, wherein the step of comparing the voltage-drop information, the power-recovery information and the rotation-control pattern information of the motor with each other, is carried out by controller configured to give and receive both a rotating speed of the motor and number of revolutions thereof to and from motor control circuit for controlling the motor through the torque generating circuit (paragraph 14).

Regarding claim 12, Yaskawa Electric Corp., Hitachi, Ltd. and Knight teach the rotation driving method as claimed in Claim 10, and Yaskawa Electric Corp. teaches the limitation wherein the step of comparing the voltage-drop information, the power-recovery information and the rotation-control pattern information of the motor, with each other, is carried out by motor control circuit for controlling the motor through the torque generating circuit (control is taught with respect to controller figure 5).

***Allowable Subject Matter***

Claims 3-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. There is a substantial record of references that read on the various claims not cited in this action, but cited on the form 892. The applicant is advised to review these additional references in preparing a response to this action, as it is proper for the examiner to cite these references in succeeding actions if the subject matter of amendments merits the inclusion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert W. Horn whose telephone number is 571-272-8591. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David S. Martin can be reached on 571-272-2107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

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December 9, 2005